CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.02/SR/SDBC/AIV/2016-17 11.07.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
Agency	**Mr. Sambashivareddy,** No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.
Name of the Work	Providing asphalting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	11.07.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	81	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	302	
4	Aggregate Impact value = percent fines $100^* (W_2/W_1)\%$	20.94	21.15	21.05

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

Note:

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Asst. Executive Engineer
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Ref: BBMP/W.No.02/SR/SDBC/Shape_T/2016-17 : 11.07.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
Agency	: **Mr. Sambashivareddy,** No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.
Name of Work	: Providing asphalting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	: EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 11.07.2016

Result : Flakiness Index = **11.85%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index **25.10%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.02/SR/SDBC/Stripping/2016-17 12.07.2016

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
Agency	**Mr. Sambashivareddy,** No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.
Name of the work	Providing asphalting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	12.07.2016

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.4	3.50	96.50
2	3.5		
3	3.6		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No: CTCE/BBMP/W.No.02/SR/SDBC/Sp_Wa/2016-17 12.07.2016

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Customer	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
Agency	**Mr. Sambashivareddy,** No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.
Name of the Work	Providing asphalting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	12.07.2016

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2010	2011	2012	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_3$ g	1255	1256	1257	
4	Weight of saturated surface dry aggregate in air	W_3 g	2022	2025	2026	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_5)$ g	767	769	769	
6	Weight of oven dried aggregate	W_4 g	2010	2012	2015	
7	Specific Gravity	$W_4/(W_3-W_5)$	2.621	2.616	2.620	2.619
8	Apparent Specific gravity	$W_4/(W_4-W_5)$	2.662	2.661	2.658	2.661
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.60%	0.65%	0.55%	0.60%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Job No.: CTCE/BBMP/W.No.02/SR/SDBC/Bit/2016-17 12..07.2016

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC:SP:-1984

CUSTOMER	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
AGENCY	**Mr. Sambashivareddy,** No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.
NAME OF THE WORK	Providing asphalting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
REFERENCE	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
SAMPLE I/D	6th A Cross western side Kondappa layout in Ward No.02
DATE OF TESTING	12..07.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	26.00
7. Bitumen content in %	5.00	5.20
8. Average	5.10	

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Job No.: CTCE/BBMP/W.No.02/SR/SDBC/Bit/2016-17 12..07.2016

BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS2386 and IRC:SP:11-1984

CUSTOMER	Asst. Executive Engineer, Yelahanka Sub Division, BBMP, Bangalore.
AGENCY	Mr. Sambashivareddy, No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.
NAME OF THE WORK	Providing asphalting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
REFERENCE	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
SAMPLE I/D	6th A Cross western side Kondappa layout in Ward No.02
DATE OF TESTING	12..07.2016

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	29.33	6.17	6.17	93.83	90-100
4.75	260.5	54.84	61.02	38.98	35-51
2.36	59.32	12.49	73.51	26.49	24-39
1.18	36.36	7.65	81.16	18.84	15-30
0.3	25.26	5.32	86.48	13.52	9-19
0.075	36.32	7.65	94.12	5.88	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	30.26	6.38	6.38	93.62	90-100
4.75	268.3	56.60	62.99	37.01	35-51
2.36	37.21	7.85	70.84	29.16	24-39
1.18	39.36	8.30	79.14	20.86	15-30
0.3	38.15	8.05	87.19	12.81	9-19
0.075	40.22	8.49	95.68	4.32	3-8

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Job No.: CTCE/BBMP/W.No.02/SR/SDBC/AGG/2016-17 12.07.2016

Aggregate Gradation Test

IS : 2386 Part I

Customer	**Asst. Executive Engineer,** Yelahanka Sub Division, BBMP, Bangalore.
Agency	**Mr. Sambashivareddy,** No.14, 6th Cross, Gopalappa Layout, Manorayanapalya, Bangalore – 32.
Name of the Work	Providing asphalting to 26th A Cross western side Kondappa layout in Ward No.02 of Yelahanka Sub Division, BBMP, Bangalore.
Reference	EE(YNK.D)E-PMT-3/W.O/ /2016-17 Dated: 19.05.2016
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	12.07.2016

Total Weight of Sample: 5200 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	290	5.6	5.58	94.42	90-100	
4.75	2650	51.0	56.54	43.46	35-51	
2.36	680	13.1	69.62	30.38	24-39	
1.18	640	12.3	81.92	18.08	15-30	
0.3	370	7.1	89.04	10.96	9-19	
0.075	300	5.8	94.81	5.19	3-8	

Total Weight of Sample: 5300 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	350	6.6	6.60	93.40	90-100	
4.75	2850	53.8	60.38	39.62	35-51	
2.36	650	12.3	72.64	27.36	24-39	
1.18	470	8.9	81.51	18.49	15-30	
0.3	340	6.4	87.92	12.08	9-19	
0.075	330	6.2	94.15	5.85	3-8	

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